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United States Department of Agriculture
Agricultural Research Administration
Bureau of Animal Industry

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X CONDENSED STATEMENT ON MEASURES TO KEEP THE
UNITED STATES FREE OF FOOT-AND-MOUTH DISEASE
TOGETHER WITH
CONTROL AND ERADICATION OPERATIONS IN MEXICO X

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The Situation In Brief

As one of the world's most contagious and devastating maladies, foot-and-mouth disease is a serious threat to the livestock and food resources of all nations. It attacks mainly cattle, swine, sheep, and goats but affects, also, other cloven-footed animals. Except for nine outbreaks of limited duration the United States has successfully maintained its freedom from this foreign plague. It has done so largely through preventive measures that the Bureau of Animal Industry has applied since its creation in 1884. The outbreaks of foot-and-mouth disease that have occurred in the United States have all been completely stamped out for the most part by vigorous eradication measures administered by Federal and cooperating State veterinary agencies, local authorities, and individuals. The last outbreak in this country was in California in 1929.

Since the disease is constantly present in most countries of the Old World and in South America, the outbreak that appeared in Mexico late in 1946 presented few new problems other than its nearness and the presence of only a land barrier between the nearest infection and the United States. Heretofore, the source of infection, when traceable, was some form of sea-borne commerce. The livestock, meat, and dairy industries of the United States are particularly fearful of foot-and-mouth disease and have actively supported the efforts of veterinary officials to develop the best methods of preventing and combating it.

Responsibility for Combating the Disease

Federal and State legislative bodies have assigned to their chief veterinary agencies and main responsibility for meeting the menace of this disease. For the United States Government, the agency, as already indicated, is the Bureau of Animal Industry of the U. S. Department of Agriculture. For the various States, the agency is usually the State livestock sanitary board, State veterinarian, or veterinary branch of the State department of agriculture. In other countries the corresponding responsibility generally rests with the chief veterinary officials.

Main Characteristics of Disease

The characteristics and outward symptoms of foot-and-mouth disease vary somewhat in different countries, in different outbreaks, and in different animals--hence its effects are not accurately predictable. Even in the same outbreak the disease may range from a mild to malignant form. The inciting cause is a virus of which at least three types are recognized. Usual early symptoms include fever and blisters on the mucous membranes of the mouth and on the skin between the toes and above the hoofs. The blisters rupture, forming erosions and ulcerations. As the disease progresses, common symptoms in cattle are the drooling of ropy saliva and marked drop in milk yield. Other effects, in all animals, are loss of appetite, lameness, and death. Except in young stock, mortality seldom exceeds 5 percent but the disease tends to leave affected animals in impaired condition--which is the main cause of economic loss.

How the Infection Is Carried

Shortly before symptoms appear and later in the course of the disease, active virus is commonly present in the meat, blood, milk, saliva, and other parts and secretions of the body. The spread of infection has been traced, chiefly, to affected animals; their fresh meat, milk, and offal; unsterilized garbage containing fresh meat; and other contaminated products. Man is resistant to the infection but may carry it moderate distances on his hands and clothing.

Methods of Control and Eradication

All authorities on foot-and-mouth disease agree that, in a country such as the United States that is free of the infection, the best method of suppressing outbreaks is the prompt destruction of all infected and exposed animals, use of stringent quarantine measures, and a thorough cleaning and disinfection of the premises including all buildings and runs used by the condemned animals. This method quickly eliminates conditions which allow the continued presence of the causative virus, thereby preventing the spread of the infection to other susceptible animals. Obviously the method gives the desired results most quickly and economically when applied before the disease spreads far. Fair indemnity is paid for the animals destroyed. United States veterinary officials have used this method with eminent success and plan to continue its use in case of possible future outbreaks in the United States.

In countries where the disease has established itself extensively, vaccination has lately come into common use in combination with other methods. In such countries the problem is generally one of control and reduction of losses, rather than eradication.

Enforcement of Quarantines to Exclude Infection From U. S.

Federal animal quarantine legislation enacted as early as 1890 authorized the Secretary of Agriculture to make rules and regulations for quarantine enforcement, with the view of excluding dangerous livestock infections from the United States. The authority thus given enabled him to prescribe terms and conditions under which animals and products may be refused entry, permitted

entry subject to restrictions, or destroyed if entered illegally into the United States. The importation of organs, glands, extracts, or secretions of ruminants or swine is permitted for pharmaceutical purposes under restrictions designed to make them safe. The Tariff Act of 1930 prohibited the importation into the United States of cattle, sheep, or other domestic ruminants or swine, or of fresh, chilled or frozen meat of such animals from a country in which foot-and-mouth disease or rinderpest is known to exist. Garbage derived from meats or meat products originating in any country in which foot-and-mouth disease or rinderpest is known to exist may not be unloaded from any vessel in the United States or within the territorial waters thereof, except for incineration under official supervision. The Department's regulations are based on modern knowledge of veterinary science and are necessarily within the authority of basic legislation. Enforcement activities are maintained at strategic points along seaboard and land ports of entry and other places when deemed necessary.

Consultations and Advisory Committees

Because of the large issues at stake, involving the national welfare, the Bureau of Animal Industry has welcomed the counsel of officials in other branches of the Government, including Congress of course, the State Department, and the Department of Agriculture's Office of Foreign Agricultural Relations and the Production and Marketing Administration. Also, in the enforcement of regulations, it has received valuable assistance from the Bureau of Entomology and Plant Quarantine of this Department, and the Bureau of Customs, Public Health, and Immigration Services.

In recent years the Bureau has had the benefit of recommendations from two advisory committees, one representing the livestock industry and the other the research point of view. The chairman of the foot-and-mouth disease industry advisory committee is Mr. Albert K. Mitchell of New Mexico and its vice chairman is Mr. J. Elmer Brock of Wyoming. The committee has ten other members, all prominent in the livestock industry. The advisory committee on foot-and-mouth disease research consists of four nationally known scientists. Its chairman is Dr. W. A. Hagan, dean of the New York State Veterinary College, Cornell University.

Especially since the outbreak of foot-and-mouth disease in Mexico, the Bureau of Animal Industry has had frequent and close contacts with Mexican officials and research workers and with those of other countries who have visited the United States and Mexico in a consulting capacity.

Foot-and-Mouth Disease Research

In the conduct of United States activities against foot-and-mouth disease, during various outbreaks, need has arisen for more scientific information than was available from foreign laboratories. The United States has never had a foot-and-mouth disease laboratory of its own, largely because of public sentiment against experimenting with the highly infectious virus. In 1925, a group of three United States scientists conducted research with the disease in European laboratories. Their work was sponsored by the U. S. Department of Agriculture and resulted in several valuable findings.

To give effect to recommendations of both the industry and research advisory committees on this disease, and on the recommendation of both foreign and domestic research workers, the Bureau sought authority from Congress, early in 1948, to conduct research on foot-and-mouth disease in the United States, subject to meticulous safeguards. After extensive hearings, Public Law 496 was approved, authorizing establishment of a foot-and-mouth disease research laboratory on a coastal island.

The Bureau has developed the preliminary plans to get the project under way when appropriated funds are available.

Protective Measures Require Sound Scientific Basis

All available evidence relating to foot-and-mouth disease points clearly to the wisdom of excluding it from the United States by every means possible and of eradicating any outbreaks that may occur, by prompt and vigorous action. As judged from veterinary, economic, and other standpoints, the slaughter method of eradication is best for the United States.

At times persons unfamiliar with the seriousness of the situation--though perhaps with good intentions--have proposed relaxation of present quarantines, the use of treatments and "cures" for the disease, and other courses which, if followed, might saddle this foreign plague permanently on the livestock industry of the United States. In view of expanding commerce of all kinds with foreign countries and existence of the disease in Mexico, the application of all practical safeguards plus new scientific research is clearly desirable. The protective measures thus far used have been on a sound scientific basis and new ones should continue to be. Expedients of questionable value have no place in either preventive or eradication programs.

Patrol of the United States-Mexican Border

Since the outbreak of foot-and-mouth disease in central Mexico late in 1946, quarantine enforcement on the United States-Mexican border has received special attention. The border is nearly 2,000 miles long and runs through extensive areas of range land where there are opportunities for both domestic and wild animals from Mexico to enter the United States. In addition extensive commerce and tourist travel between the two countries involve additional problems in inspection and quarantine operations.

To meet these situations the Bureau of Animal Industry maintains a patrol that covers every mile of the border every day. A force of about 600 men, using mainly horses and jeeps, is divided into small groups working out of camps about 15 to 20 miles apart. These men know the country and the people in the areas in which they work. They are skilled in handling livestock and are experienced in tracking stray or smuggled animals. Products or animals that have entered the United States illegally are condemned and destroyed.

At international bridges and other points where there is much travel between Mexico and the United States, the Bureau inspectors work in cooperation with customs and immigration inspectors in the enforcement of regulations.

The Bureau has supported proposals to construct a substantial fence along the United States-Mexican border as a means of further restricting the movement of dangerous animals across the border. Costs of the patrol operations could be greatly reduced in areas where suitable fencing is built.

Events Leading Up to the Outbreak of Foot-and-Mouth Disease in Mexico

In a treaty entitled "Safeguarding Livestock Interests through the Prevention of Infectious and Contagious Disease between the United States and Mexico" proclaimed in 1930, the two countries undertook to prevent the importation of ruminants or swine from countries where foot-and-mouth disease or rinderpest exists. In October 1945 and again in May 1946, the Mexican Government permitted the importation of several hundred Zebu cattle from Brazil where the former disease is known to be present.

In cooperation with the U. S. Department of State, the U. S. Department of Agriculture protested against the importations. As the protests were unavailing, the Secretary of Agriculture placed restrictions on the entry of ruminants and swine from Mexico. This action led to several discussions between United States and Mexican officials, the chief result of which was the decision to determine, by inspections, whether either of the importations had introduced foot-and-mouth disease into Mexico. The results of inspections were at first negative, but later observations and tests, made in December 1946, disclosed the disease in the State of Veracruz. Circumstances pointed to the second importation of Zebu cattle as the probable source of the outbreak but the evidence was inconclusive.

Early Spread of the Disease in Mexico

The outbreak soon spread to nine Mexican States and the Federal District, which includes Mexico City. Mexican authorities, with the aid of troops, established quarantines in the endeavor to prevent spread of the infection. Meanwhile the officials sought aid from the United States in coping with the situation, which constituted a serious threat to the livestock industries of both countries.

Congress Authorizes U. S. Aid

Legislation enacted by Congress on February 28, 1947 and subsequently, authorized the Secretary of Agriculture to aid the Government of Mexico in controlling and eradicating the outbreak. The form of cooperation soon involved (1) the establishment of a joint commission of officials from the two countries to direct eradication work, (2) the assignment of veterinarians and other trained workers to conduct field operations, and (3) the shipment of large quantities of much-needed machinery and supplies from the United States to Mexico.

Early Plans for Eradication

A series of meetings in the spring of 1947 led to the decision to use to the utmost all available resources, including manpower, supplies, and funds, in an effort to stamp out the disease quickly. The plan of eradication included the slaughter and burial of infected and exposed animals, the maintenance

of quarantines, disinfection operations--in short practically the same methods that had been used with success during outbreaks in the United States. Some modifications were necessary to meet Mexican conditions and customs. For instance, since oxen are the chief draft animals in Mexico and since large numbers of them were affected with the disease, it became necessary to establish a program of replacing slaughtered oxen with mules. This enabled food production on Mexican farms to continue. The plan of eradication provided for the payment of indemnities, based on fair appraised value, for all cattle, swine, sheep, and goats destroyed. Mexican and United States veterinarians, technicians, appraisers, paymasters, and other trained workers generally worked in pairs--all under the direction of the joint Commission. The Mexican National Army has aided in the campaign largely by providing protective services and cooperating in quarantine enforcement.

In the endeavor to obtain a maximum of public support and cooperation, officials of the Commission have issued frequent reports, telling about the disease, current happenings in the campaign, and results obtained.

Special Problems and Difficulties

In a large-scale program of this kind, involving the slaughter of animals owned by persons who often did not realize the seriousness of the disease, many special problems have arisen. Early in the campaign there were objections to the slaughter policy as being too drastic. There were disagreements over appraisals, while meanwhile the affected animals, still alive, spread the disease to others. There were difficulties in transportation because of poor roads in many rural areas. The unfamiliarity of most of the United States staff with the Spanish language was another drawback. In several localities, opposition of the Mexican people to the campaign flared into threats against field workers and in a few cases there was open violence. Other obstacles to progress were sickness caused by tropical diseases and heavy seasonal rains that impeded travel and otherwise hampered the work.

Extensive Field Operations Failed to Check Disease

By the end of November 1947, the United States had sent to Mexico a force of approximately 575 technicians and about 2,000 pieces of automotive and other heavy equipment. The total slaughter of infected and exposed animals had amounted to about 486,000 cattle and 464,000 swine, sheep, and goats. Early in November, slaughtering operations were going forward at the rate of about 50,000 animals a week, yet the spread of the disease to new areas showed that the quarantine lines were not being maintained. Moreover a strong sentiment was developing among the Mexican people and their officials for a change to a program that would be less drastic. An appraisal at that time indicated that a continuation of the slaughter plan to eradicate the disease from Mexico might mean the destruction of between 4,500,000 and 5,000,000 cattle and a similar number of swine, sheep, and goats. Mexican officials presented to the Commission their conclusion that the country could not stand the economic shock of this wholesale destruction.

Revised Plan of Operation

Accordingly, after detailed study of the program, the joint Commission agreed to a change in the original plan that put more emphasis on control of the disease and less on its early eradication from the main infected area. This change became effective November 26, 1947. The chief features of the revised program were (1) strengthening the quarantine lines at the northern and southern boundaries of the main infected area, (2) conducting extensive inspections to determine where infection exists, (3) the prompt disposal, by slaughter, of infected and exposed animals, and (4) the vaccination of healthy susceptible animals to build up their resistance to the disease. The plan included a program of vaccine production and the furtherance of plans to develop a market outlet for cattle in northern Mexico in the form of canned meat.

The revised plan provided for the creation of protective, or buffer, zones between each of the quarantine lines and the main infected area. In these zones most of the personnel and equipment were to be concentrated and most of the vaccination done. Infected and exposed animals found within these zones were to be slaughtered. The general strategy was, first, to prevent any further outward spread of the infection and then to reduce, gradually, the size of the main infected area as eradication progressed along its northern and southern boundaries.

Results Obtained Under Revised Plan

The revised plan or, as it is sometimes called, the second phase of the campaign against the disease has met with general public support in Mexico and has given encouraging results. To the end of September 1948 the Commission had moved the northern quarantine line southward three times. The three changes reduced the size of the original quarantined area by about a tenth. Though inspections revealed that most of the freed territory had never been infected, other parts of it contained infected herds. After these were destroyed the premises were disinfected and subsequently tested for safety for restocking. At its peak the outbreak involved all or parts of 18 Mexican States. Now, so far as known, the infection exists in only 13 of those States.

The program of vaccine production and use has also moved forward rapidly. During September 1948, the Commission's laboratories produced 630,000 doses of vaccine. In October the output was 1,060,000 doses, and in November 1,350,000 doses. A total of 1,750,000 doses was reached in December and 2,400,000 in January. In excess of 4,500,000 animals--cattle, swine, sheep, and goats--have been vaccinated. Present plans call for further development of this part of the program.

Current disinfection activities, in the course of a month, cover about 20,000 stock trucks, railroad cars, airplanes, and boats.

Personnel of Commission

The organization that administers the program in Mexico is the Mexican-United States Commission for the Eradication of Foot-and-Mouth Disease. It consists of eight members, four from each of the two countries. Its director is Oscar Flores, who is also the Mexican Undersecretary of Agriculture for

Livestock. Other Mexican members are Jose Figueroa, Federico Rubio Lozano, and Ignacio de la Torre. The Co-director of the Commission, representing the United States, is General H. H. Johnson. He is also Special Assistant to the U. S. Secretary of Agriculture and consultant to the Chief of the Bureau of Animal Industry. Other United States members of the Commission are Dr. B. T. Simms, Chief of the Bureau of Animal Industry, Dr. M. S. Shahan of the Bureau's Pathological Division, and Mr. Don Stoops, assistant to the Administrator of the Production and Marketing Administration.

Meat Purchase Program

The Production and Marketing Administration has been largely responsible for the development of a program for the purchase of canned meats from processing plants in northern Mexico. For the fiscal year 1948-49 this program involves contracts for 150,000,000 pounds of products. So far most of the meat which has been resold has gone for civilian feeding in Europe. Fulfillment of all present contracts will provide an outlet for about 520,000 cattle in northern Mexico, thus lessening the dangers of overstocking and the spread of the disease to that area.

Operations and Techniques Have Scientific Basis

The campaign in Mexico has been successful thus far in confining the disease to central Mexico, thereby preventing its spread to Central American countries, northern Mexico, and the United States. Fortunately the infective virus is now more quiescent than in the early stages of the outbreak and, with the help of vaccination and other control measures, there are good prospects for reducing further the size of the main quarantined area. It is yet too early to venture a prediction on the length of the campaign.

Through publications, picture services, and radio, the Commission in Mexico and Federal and State agencies in the United States are seeking the understanding and cooperation of the public in measures to suppress the outbreak in Mexico and to exclude the infection, regardless of its origin, from the United States.

Results are presently encouraging. We hope that major successes can be achieved. We must remember, though, that the task in Mexico is gigantic and one for which there is no real precedent anywhere. Nevertheless, the plan of operation and the techniques used are based on scientific principles and provide promising means of achieving desired results.

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